CLAIMS

What is claimed is:

1. A method comprising:

monitoring a number of idle states and busy states in a disk drive; and

limiting performance of read/write commands by the disk drive based on whether a sufficient number of idle states has been monitored to avoid exceeding a duty cycle rating of the disk drive.

2. The method of claim 1 wherein the step of monitoring further comprises utilizing a time count to track the number of idle states and busy states in the disk drive.

3. The method of claim 2 further comprising incrementing the time count by a first value for each idle state.

4. The method of claim 3 further comprising decrementing the time count by a second value for each busy state.

5. The method of claim 4 further comprising selecting the first value and the second value to provide a ratio according to a target duty cycle for the disk drive.

6. The method of claim 2 wherein the step of limiting performance further comprises determining whether the time count has an accumulated value that is greater than zero.

7. The method of claim 6 performing a read/write command when the accumulated value is greater than zero.

8. The method of claim 7 delaying performance of a read/write command until the accumulated value is greater than zero.

9. The method of claim 1 further comprising:

utilizing a time count that adjusts in accumulated value based on the number of idle states and busy states in the disk drive;

determining whether the time count has an accumulated value that is greater than zero;

performing a read/write command when the accumulated value is greater than zero; and

delaying performance of a read/write command until the accumulated value is greater than zero.

10. A disk drive comprising:

a storage disk; and

a controller coupled to the storage disk and controlling data reads from and data writes to the storage disk by monitoring a number of idle states and busy states and limiting performance of read/write commands based on whether a sufficient number of idle states has been monitored to avoid exceeding a duty cycle rating of the disk drive.

11. The disk drive of claim 10 wherein the controller further utilizes a time count to track the number of idle states and busy states.

12. The disk drive of claim 11 wherein the time count increments by a first value for each idle state.

13. The disk drive of claim 12 wherein the time count decrements by a second value for each busy state.

14. The disk drive of claim 13 wherein the first value and the second value comprise a ratio of values based on a target duty cycle for the disk drive.

15. The disk drive of claim 11 wherein the controller further determines whether the time count has an accumulated value that is greater than zero.

16. The disk drive of claim 15 wherein the controller performs a read/write command when the accumulated value is greater than zero.

17. The disk drive of claim 16 wherein the controller delays performance of a read/write command until the accumulated value is greater than zero.

18. The disk drive of claim 10 wherein the controller further:

utilizes a time count that adjusts in accumulated value based on the number of idle states and busy states in the disk drive;

determines whether the time count has an accumulated value that is greater than zero;

performs a read/write command when the accumulated value is greater than zero; and

delays performance of a read/write command until the accumulated value is greater than zero.

19. A computer readable medium containing program instructions for increasing the quality and reliability of storage disks, the program instructions comprising:

monitoring a number of idle states and busy states in a disk drive; and

limiting performance of read/write commands by the disk drive based on whether a sufficient number of idle states has been monitored to avoid exceeding a duty cycle rating of the disk drive.

20. The computer readable medium of claim 19 further comprising:

utilizing a time count that adjusts in accumulated value based on the number of idle states and busy states in the disk drive;

determining whether the time count has an accumulated value that is greater than zero;

performing a read/write command when the accumulated value is greater than zero; and

delaying performance of a read/write command until the accumulated value is greater than zero.